



Intelligent Multitasking Machines

# ***MULTUS BII series***

***MULTUS B200II    MULTUS B300II  
MULTUS B400II***



Intelligent Multitasking Machines

# **MULTUS BII series**

**MULTUS B200II / MULTUS B300II / MULTUS B400II**



Thermo-Friendly  
Concept



Collision Avoidance  
System



Machining  
Navi

## **Intelligent evolution from the future**

Okuma's "multitasking wizard" has evolved and multiplied into a new breed. Always toward higher productivity, seconds faster, and microns more beautiful.



**MULTUS B200II**



**MULTUS B300II**



**MULTUS B400II**

Machine photo shows special front doors for show purposes, and other optional specifications.



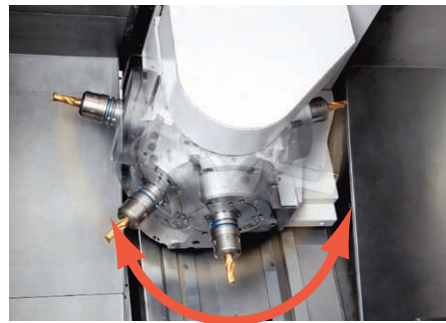
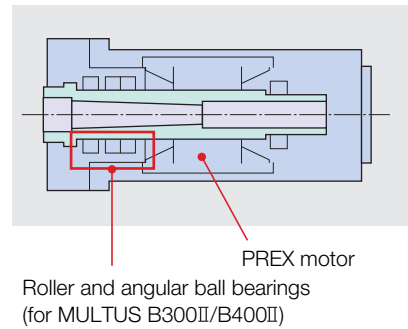
# Steady, high production

## Powerful, compact turret

- Compactness and high output with PREX motor
- Highly rigid roller bearings for live tool spindle (front bearings) (for MULTUS B300II/B400II)

Motor output	MULTUS B200II	12,000 min <sup>-1</sup> : VAC 12 kW
		20,000 min <sup>-1</sup> : VAC 9 kW*
	MULTUS B300II	6,000 min <sup>-1</sup> : PREX 11 kW
		10,000 min <sup>-1</sup> : PREX 16 kW
	MULTUS B400II	6,000 min <sup>-1</sup> : PREX 14 kW
		10,000 min <sup>-1</sup> : PREX 20 kW

\*HSK-A63



**B-axis indexing: 225°**  
(minimum control angle: 0.001°)

## PREX motor

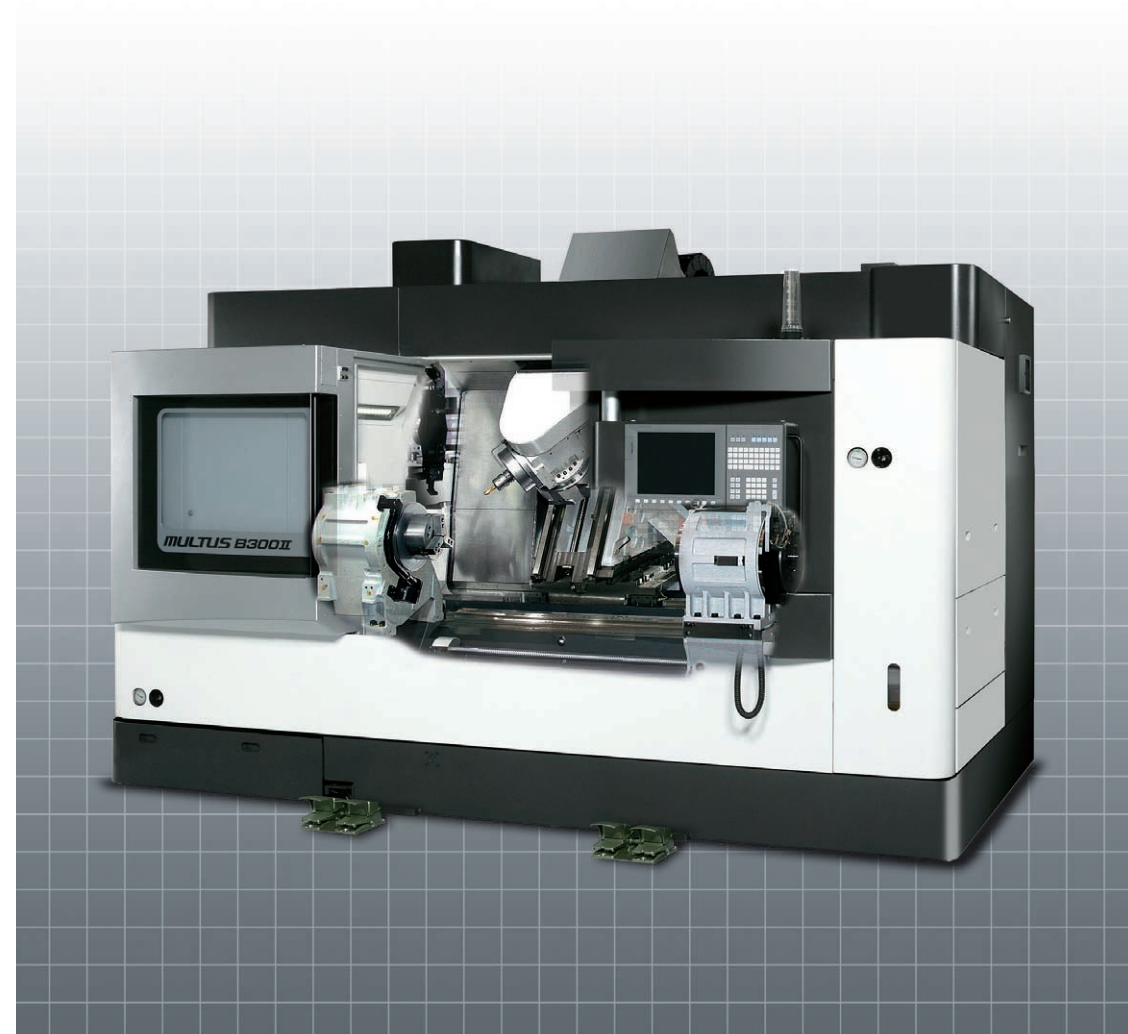
- High efficiency by reducing roller heat (120% compared with previous model)
  - Small rotor with inertia reduced by half significantly reduces acceleration and deceleration times
- 0 → 10,000 min<sup>-1</sup> in 0.8 seconds**  
(MULTUS B300II)

Main spindle PREX motor  
2009  
Superior Energy Saving Device  
The Japan Machinery  
Federation Chairman's Award

**MULTUS B200II**  
Main spindle

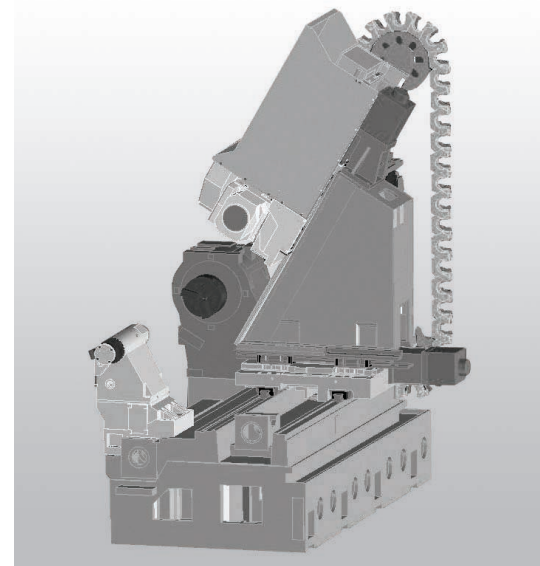


**MULTUS B300/400II**  
Milling tool spindle



## Highly rigid bed and guideways

- **Bed**  
Stable machining achieved with wide, rigid bed.
- **Guideway system**  
Featuring X-Y-Z-axis roller guides designed with high rigidity, antiwear, and vibration damping. Roller guide rigidity 2.6~3.0 times that of ball guide.

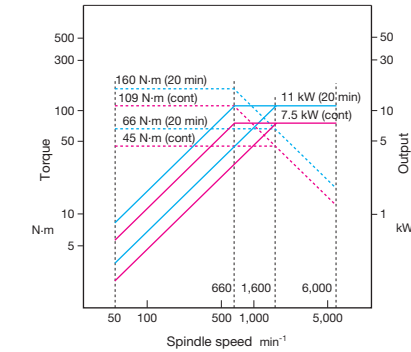


## Spindle torque/output diagrams

### MULTUS B200II

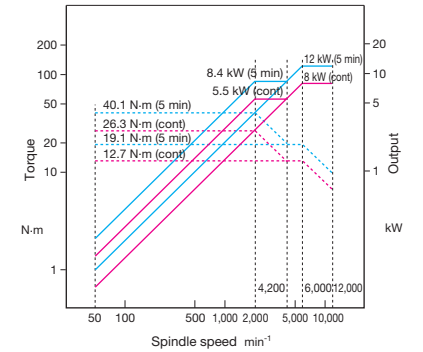
#### Main spindle motor

- Spindle speed 6,000 min<sup>-1</sup>
- Output PREX 11/7.5 kW (20 min/cont)
- Torque 160/109 N-m (20 min/cont)



#### Milling tool

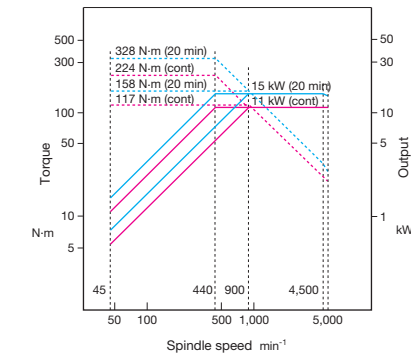
- Spindle speed 12,000 min<sup>-1</sup>
- Output VAC 12/8 kW (5 min/cont)
- Torque 40.1/26.3 N-m (5 min/cont)



### MULTUS B300II

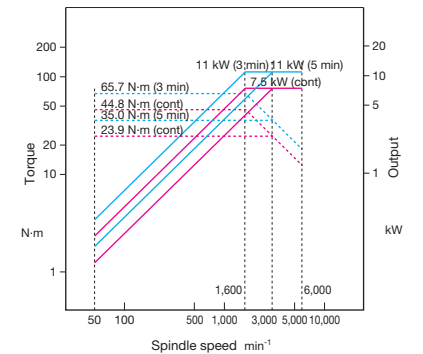
#### Main spindle motor

- Spindle speed 5,000 min<sup>-1</sup>
- Output VAC 15/11 kW (20 min/cont)
- Torque 328/224 N-m (20 min/cont)



#### Milling tool

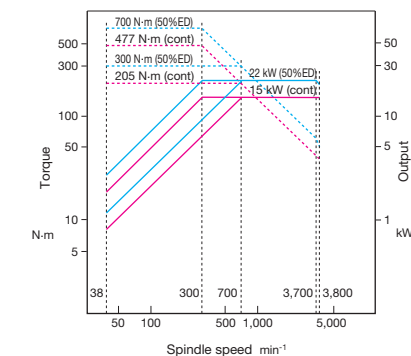
- Spindle speed 6,000 min<sup>-1</sup>
- Output PREX 11/7.5 kW (3 min/cont)
- Torque 65.7/44.8 N-m (3 min/cont)



### MULTUS B400II

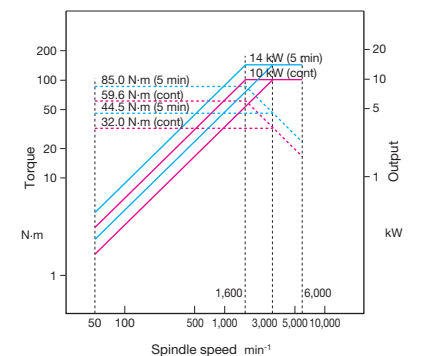
#### Main spindle motor

- Spindle speed 3,800 min<sup>-1</sup>
- Output VAC 22/15 kW (50%ED/cont)
- Torque 700/477 N-m (50%ED/cont)

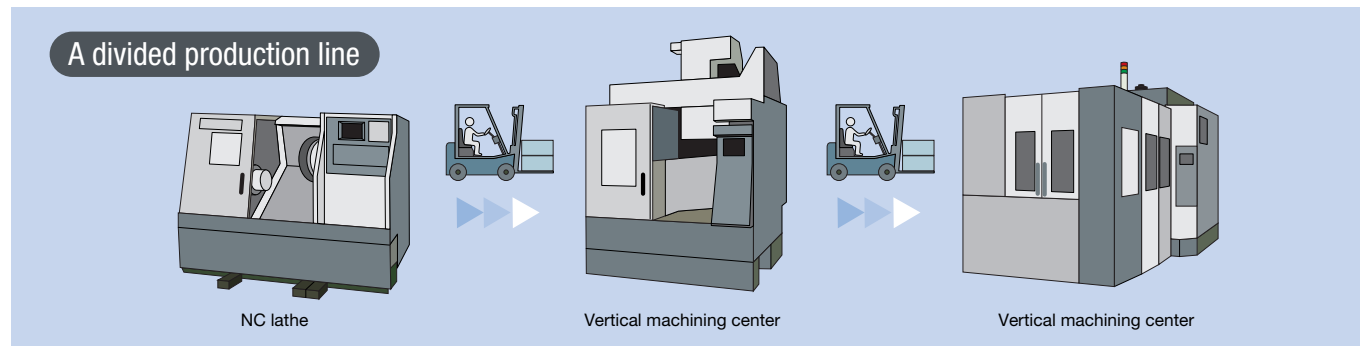


#### Milling tool

- Spindle speed 6,000 min<sup>-1</sup>
- Output PREX 14/10 kW (5 min/cont)
- Torque 85/59.6 N-m (5 min/cont)

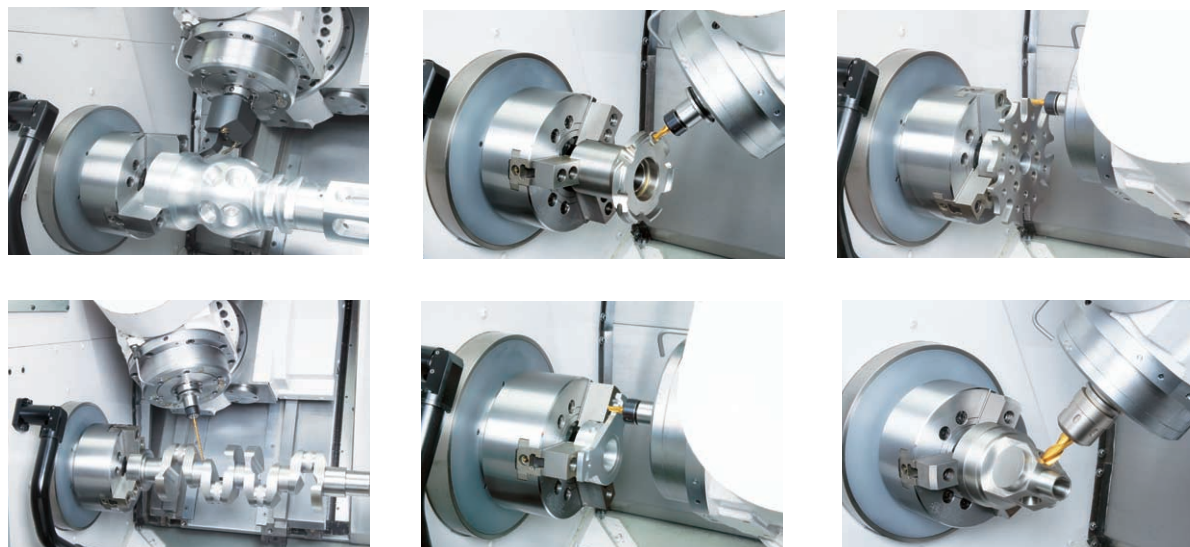
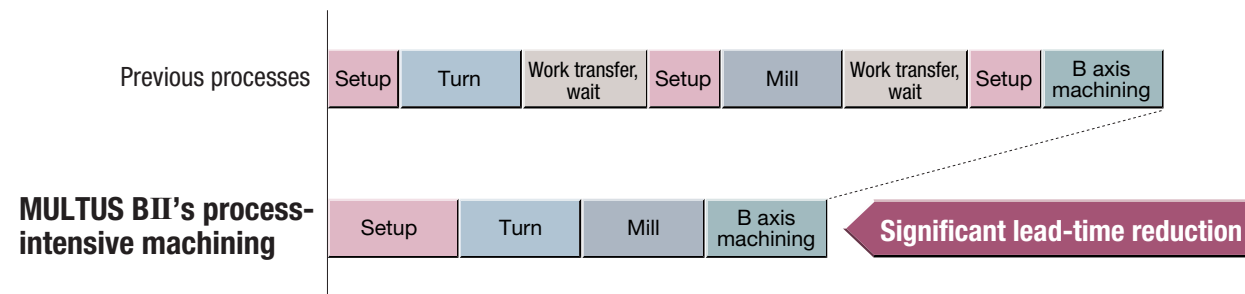


# The ultimate fusion of turn-mill operations



## Lathe, vertical or horizontal machining center, and material handling operations consolidated into one machine...

Shorter deliveries, more effective use of floor space—plus the limination of parts in waiting between operations, fewer setups, less labor, etc.—result in higher machine utilization. Customers truly benefit from much less time needed for process control and rastically reduced overall operating costs.



# Improved machining efficiency with reliable accuracy and power

Thermal deformation over time:  
**less than 10 μm**

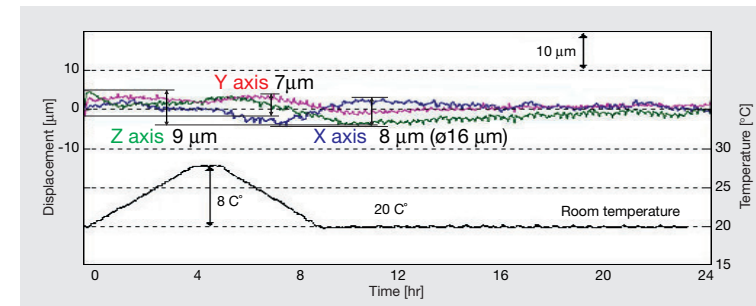
(MULTUS B300II actual data\*)



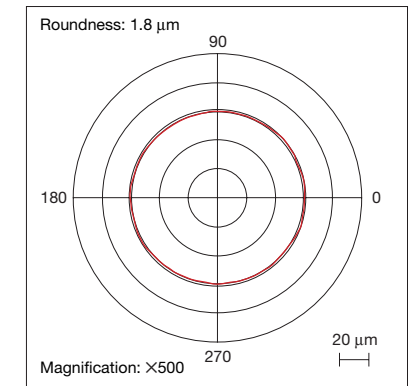
Thermo-Friendly  
Concept

Contouring accuracy (roundness)  
**1.8 μm**

(MULTUS B300II actual data\*)



- Operating conditions: Main spindle 3,800 min<sup>-1</sup> (2.5 min), Milling spindle 6,000 min<sup>-1</sup> (6 min), Interval 10,000 min<sup>-1</sup> (6 min) (0.5 min)
- Cycle time: 15 min
- Coolant



- Workpiece: Al
- Cutting conditions: ø12-mm end mill (4-flute), Spindle speed: 8,000 min<sup>-1</sup>, Feedrate: 500 mm/min

## Machining Capacity [Actual data\*]

	MULTUS B200II	MULTUS B300II	MULTUS B400II
<b>Turning</b>	• Heavy-duty: <b>2.5 mm<sup>2</sup></b> (379 cm <sup>3</sup> /min)	• Heavy-duty: <b>3.0 mm<sup>2</sup></b> (490 cm <sup>3</sup> /min)	• Heavy-duty: <b>4.8 mm<sup>2</sup></b> (726 cm <sup>3</sup> /min)
• OD (S45C)			
Cutting speed	135 m/min	150 m/min	140 m/min
Cutting depth	5 mm	6 mm	8 mm
Feed rate	0.5 mm/rev	0.5 mm/rev	0.6 mm/rev
• Insert drill (S45C)			
40-mm carbide drill		50-mm carbide drill	63-mm carbide drill
Cutting speed	150 m/min	150 m/min	180 m/min
Feed rate	0.18 mm/rev	0.22 mm/rev	0.22 mm/rev
<b>Milling</b>	• Chip volume: <b>224 cm<sup>3</sup>/min</b>	• Chip volume: <b>360 cm<sup>3</sup>/min</b>	• Chip volume: <b>450 cm<sup>3</sup>/min</b>
• 7-flute, carbide, ø20-mm end mill (S45C)			
Cutting speed	200 m/min	250 m/min	210 m/min
Cutting depth	2.8 × 20 mm	8 × 20 mm	4 × 20 mm
Feed rate	1.26 mm/rev	0.56 mm/rev	1.68 mm/rev
Chip volume	224 cm <sup>3</sup> /min	360 cm <sup>3</sup> /min	450 cm <sup>3</sup> /min
• 5-blade ø50-mm face mill (S45C)			
Cutting speed	300 m/min	300 m/min	300 m/min
Cutting depth	2.6 × 35 mm	3.3 × 35 mm	3.8 × 35 mm
Feed rate	1.25 mm/rev	1.5 mm/rev	1.5 mm/rev
Chip volume	217 cm <sup>3</sup> /min	330 cm <sup>3</sup> /min	380 cm <sup>3</sup> /min
• Insert drill (S45C)			
30-mm carbide drill		40-mm carbide drill	40-mm carbide drill
Cutting speed	160 m/min	120 m/min	120 m/min
Feed rate	0.13 mm/rev	0.11 mm/rev	0.13 mm/rev
• TAP (S45C)			
	M20 P2.5	M20 P2.5	M24 P3

Note: The "actual data" referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, environmental conditions during measurement, tooling, cutting, and other conditions.

## Advanced fundamentals



- High-performance NC computer in a flat panel
- OSP full range absolute position feedback (zero point return not required)
- Equipped with high-performance, power-saving processor (dual core)
- Large color LCD and touch panel operations
- Program storage capacity: 2 GB
- Operation backup capacity: 2 MB
- No. of tool registrations: Max 1,000 tools
- Tool additional sets (including tool wear compensation, nose R correction): 20 sets per tool
- USB ports (2 channels), RS-232-C, Ethernet (100/1000 Mbps)

## “Easy Operation”

Smooth and simple manual machine operations, because the Control was built by Okuma—a “Machine & Control” manufacturer

Rapid feed, cutting feed, and spindle override adjustments are easier with these rotary switches.

The red keys are easy to spot and stop an operation.



Grouped axis feed buttons (C-axis on/off possible)

Grouped M-spindle operations

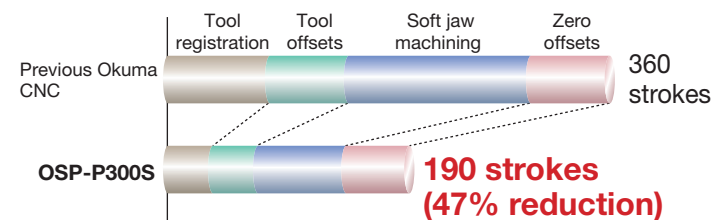
Spindle operation group

Spindle clamp useful when mounting jaws

Tool magazine index useful when changing tool inserts

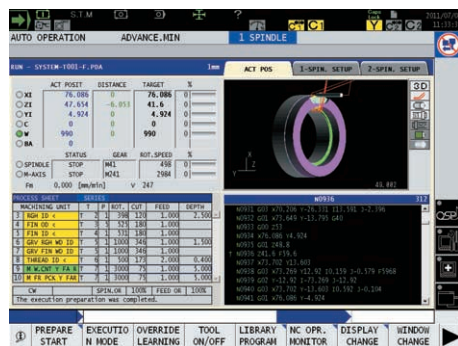
Turret position selector matches actual turret indexed position

Significant reduction in number of keystrokes (actual data)



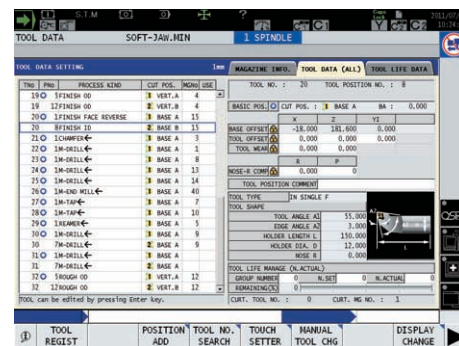
The display screen

During an operation, you can simultaneously view in a 4-split screen; current positions, and screens from various applications (Collision Avoidance System, Advanced - One Touch IGF, part programs)—to confirm machine conditions at a glance.



Easy tool preparations

Being able to perform tool preps for the many tools required in multitasking applications—in one screen—provides enormous benefits.



## “Working with temperature changes”

# Manageable Deformation—Accurately Controlled Thermo-Friendly Concept



“Thermo-friendly” concept that enables remarkable machining accuracy through original structural design and thermal deformation control technology. Free from troublesome dimensional compensation and warm-up. Exhibits excellent dimensional stability even during consecutive operation over long periods and environmental temperature change in the plant.

Highly Accurate Control Technology

Simple machine construction

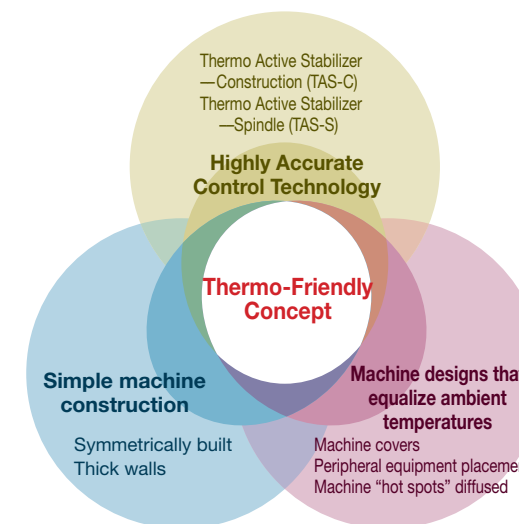
Machine designs that equalize ambient temperatures

TAS-S [Thermo Active Stabilizer – Spindle]

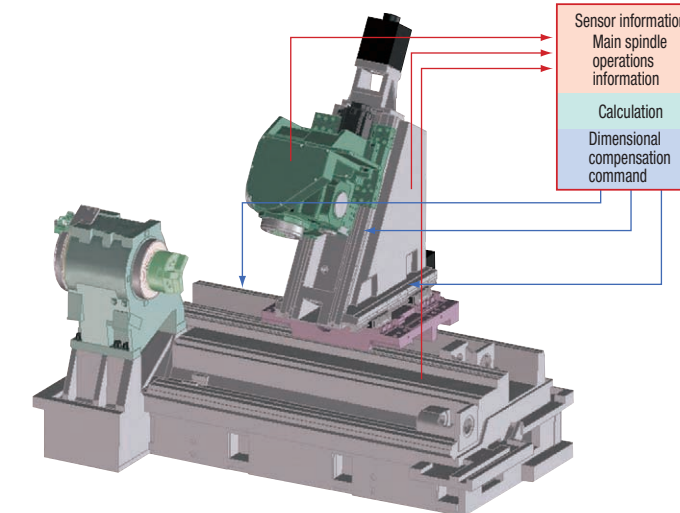
X-Y-Z axes control thermal deformation of the milling spindle

TAS-C [Thermo Active Stabilizer – Construction]

Overall control of thermal deformation on headstock, bed, column, and turret



Super thermostability minimizes machining dimensional changes over time



## Environmental economic benefits of Okuma's Thermo-Friendly Concept

Does not use large amounts of coolant or large capacity cooling systems to cool the machine (Note 2). In addition, if the operator is comfortable, there is no need for air conditioning to ensure accuracy. In environments with normal temperature changes, machining accuracies equivalent to those in temperature-controlled rooms are achieved.

Amount of energy consumed for temperature-controlled room

Savings of approximately **135,000 kWh** per year (Note 1)

Prevents CO<sub>2</sub> emissions equivalent to about 7,500 beech trees



Amount of power consumed by hydraulic oil cooling system

Savings of approximately **36,000 kWh** per year (Note 2)

Prevents CO<sub>2</sub> emissions equivalent to about 2,000 beech trees



Note 1: Calculations are examples only, and may differ from actual circumstances. Temperature-controlled room capacity: 10 m×10 m×H3 m±2°C  
 Note 2: MULTUS B300II spindle cooling system is 2.75 kW, and the difference is displayed. 5.5 kWh×4 machines. Differs according to machine model. Numerals on display may differ from actual use.

## Energy-savings from PREX motor

PREX motor developed by Okuma eliminates rotor winding and achieves small size and efficiency. High output, low heat generation spindle drive system is used.

Energy efficiency 5% increase (compared with previous model) Power consumption 10% decrease (compared with previous model)

Thermo-Friendly Concept

Ecology & Economy

Machines and technology to achieve eco-friendly “monozukuri”

Energy-saving function

Energy-saving technology

Energy-saving function

Energy-saving servo, NC units

Power-saving function

Uses PREX motor

- High-performance single CPU configuration
- Energy savings from simple design
- Energy-saving display device

## World's first "Collision-free machine"

Collision prevention

# Collision Avoidance System



## Allowing operators to focus on making parts

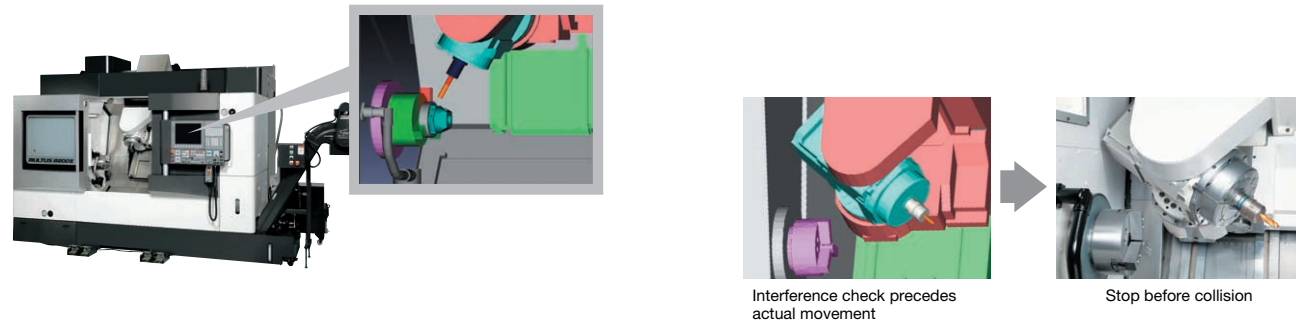
NC controller (OSP) with 3D model data of machine components—workpiece, tool, chuck, fixture, headstock, turret, tailstock—performs real time simulation just ahead of actual machine movements. It checks for interference or collisions, and stops the machine movement immediately before collision. Machinists (novice or pro) will benefit from reduced setup and trial cycle times, and the confidence to focus on making parts.

### Collision prevention during automatic operation

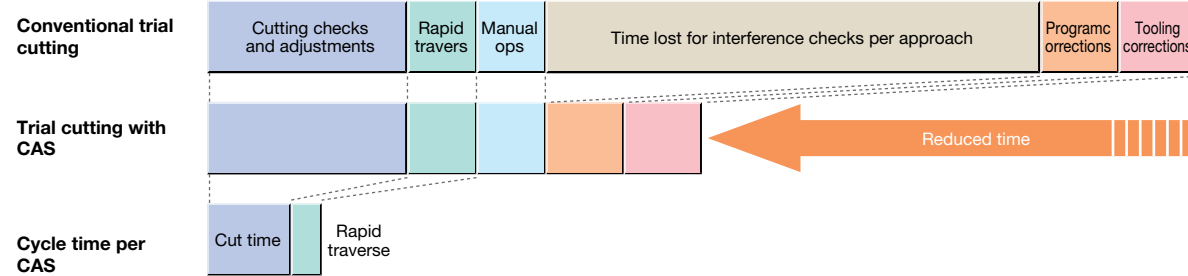
NC program is read in advance and axial travel commands are checked for interference with consideration of zero point and tool compensation values set in NC. Axial travel movement is stopped temporarily before collision occurs.

### Collision avoidance in manual operation

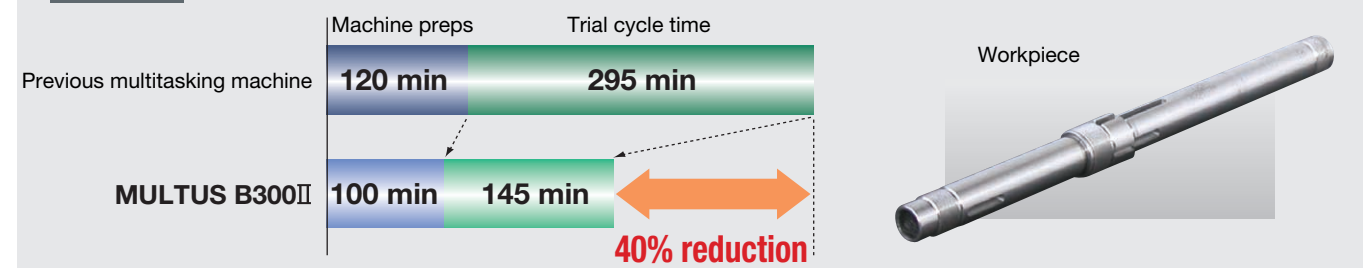
Especially useful for machine operators setting up a job, collision avoidance in manual mode provides collision-free confidence and faster machining preparations.



## Improved spindle utilization



### Case example Significant reduction in machining preparation time



Caution The Collision Avoidance System (CAS) detects collision per 3D models of the machine components, tools, fixtures, and workpieces stored in the OSP. Thus, if the entered tool, fixture, or workpiece shape differs from their actual dimensions, CAS will not accurately detect possible collisions. Also, for units with collision detection, there may be limitations. CAS will not function when turned OFF (though machine is ON).

## Find the best cutting condition for your application

Cutting conditions search

# Machining Navi



Cost reduction—shorter cycle times and higher productivity—is required to compete in today's global market. Machining Navi, with clear visuals of complex cutting conditions, is a breakthrough tool that enables the machine operator to navigate the machine and tool capabilities to their best performance levels.

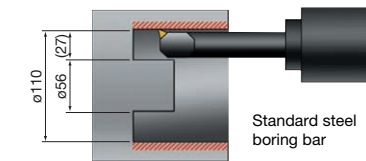
For turning

## "Machining Navi" L-g (guidance) Chatter-free applications for lathes

Chatter in a lathe can be suppressed by changing spindle speeds to the ideal amplitude and wave cycle.

### Boring bar with 5 times the extension for chatter-free internal diameter boring

- Tool: Boring bar (steel)  
Diameter:  $\phi 20$  mm  
Extension: 100 mm
- Cutting speed: 180m/min
- Workpiece material: S45C



### Efficient, small OD shaft turning without steadyrest

- Workpiece: Drive shaft  
Diameter:  $\phi 17$  mm  
Length: 400mm
- Workpiece material: S45C
- Cutting conditions  
Cutting depth: 0.1mm  
Feedrate: 0.12mm/rev  
Cutting speed: 170m/min



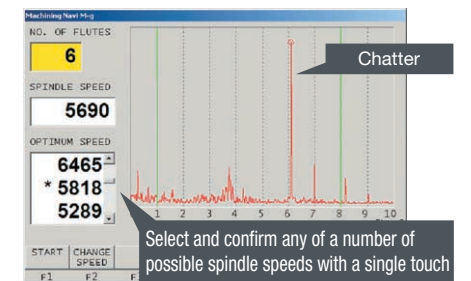
For milling

## Simple, auto-mode—leave it to the machine Finding optimum cutting conditions quickly "Machining Navi" M-i (intelligently optimized spindle speed control)

Chatter vibration is measured by built-in sensors, and spindle speed is automatically changed to the optimum speed. In addition, advanced graphics of the optimal cutting conditions represent effective alternatives to suppress various chatter characteristics throughout the low to high speed zones.

## Adjust cutting conditions while monitoring the data "Machining Navi" M-g (guided optimization of spindle speed)

From chatter noise picked up by the microphone, Machining Navi will display the best options for chatter-free spindle speed. The operator can select a recommended speed and immediately confirm the result.



### Changes tool rotation, cuts tool costs in half, and reduces cycle times

Tooling cost reduced with small diameter end mill. Cycle time reduced by approximately double the spindle speed.  
Workpiece: S45C  
Tool:  $\phi 12 \rightarrow \phi 6$ -mm end mill  
Spindle speed: 2,100  $\rightarrow$  5,500 min<sup>-1</sup>

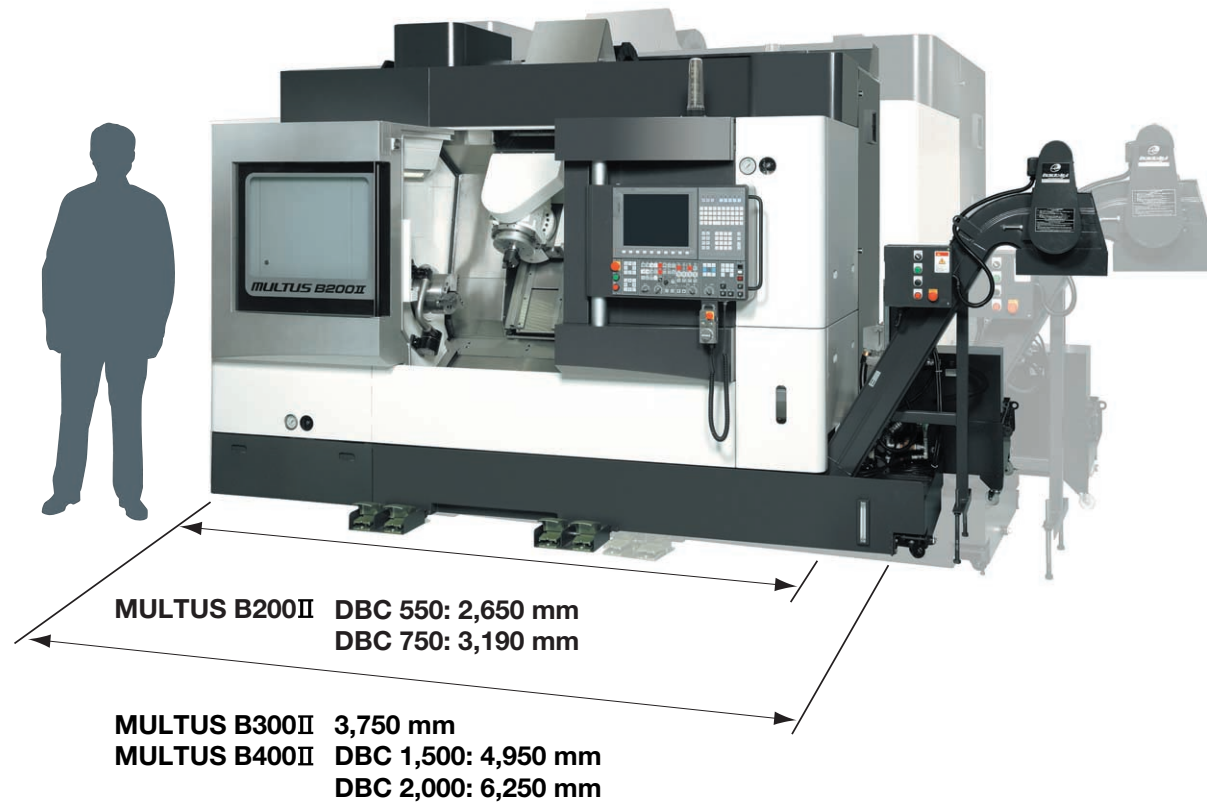
### Chatter disappeared after changing the tool rotation by only 7 revolutions

Workpiece: S45C  
Tool:  $\phi 63$ -mm face mill  
Spindle speed: Chattering at 400 min<sup>-1</sup>,  $\rightarrow$  smooth cutting at 407 min<sup>-1</sup>

# Ease of use that stirs the senses and the thrill of “monozukuri”

(making things better than ever — manufacturing at its best)

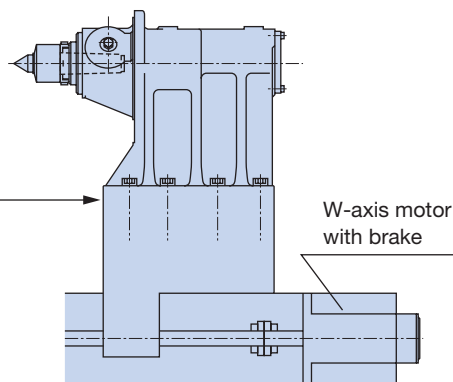
## Small footprint



## NC tailstock

### Tailstock thrust

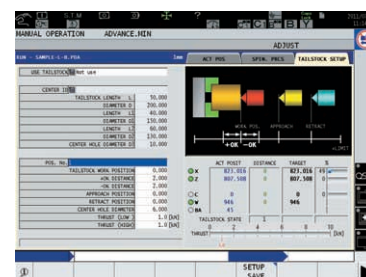
- MULTUS B200II: 0.5~3 kN
- MULTUS B300II: 1~5 kN
- MULTUS B400II: 1.5~7 kN  
(High thrust specs: ~10 kN)



### W-axis travel

- MULTUS B200II  
DBC 550: 720 mm (28.35 in.)  
DBC 750: 810 mm (31.89 in.)
- MULTUS B300II  
1,000 mm (39.37 in.)
- MULTUS B400II  
DBC 1,500: 1,550 mm (61.02 in.)  
DBC 2,000: 2,050 mm (80.7 in.)  
(High thrust specs: ~10 kN)

- Tailstock positions and thrust settings can be set and changed by program
- Drastically reduces setup times



Swiveling operation panel



Lightweight front door



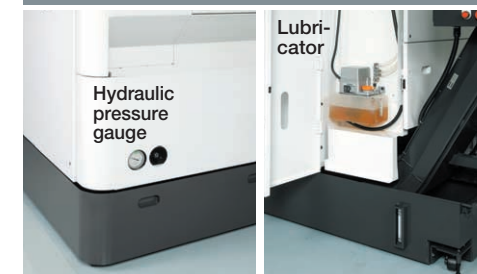
ATC operation



Detachable coolant tank



Machine front maintenance



In-machine work lamp (LED)



Status indicator (optional)



These three photos show a lit condition.

## Opposing spindle (W specs)



### MULTUS B200II

- Max 6,000 min<sup>-1</sup>
- PREX 11/7.5 kW (15/10 hp)

### MULTUS B300II

- Max 5,000 min<sup>-1</sup>
- VAC 15/11 kW (20/15 hp)

### MULTUS B400II

- Max 3,800 min<sup>-1</sup>
- VAC 22/15 kW (30/20 hp)

### Machining Capacity [Actual data]

[Workpiece material S45C]

**Heavy-duty: 2.0 mm<sup>2</sup>**  
Cutting speed: 150 m/min (492 fpm)  
Cutting depth: 5 mm (0.20 in.)  
Feedrate: 0.4 mm/rev (0.02 ipm)

**Heavy-duty: 2.5 mm<sup>2</sup>**  
Cutting speed: 100 m/min (328 fpm)  
Cutting depth: 5 mm (0.20 in.)  
Feedrate: 0.5 mm/rev (0.02 ipm)

**Heavy-duty: 3 mm<sup>2</sup>**  
Cutting speed: 100 m/min (328 fpm)  
Cutting depth: 6 mm (0.24 in.)  
Feedrate: 0.5 mm/rev (0.02 ipm)

\*Data listed in the catalog are actual data. These values may not be obtained depending on specifications, tools, and cutting and other conditions.

## Machine Specifications

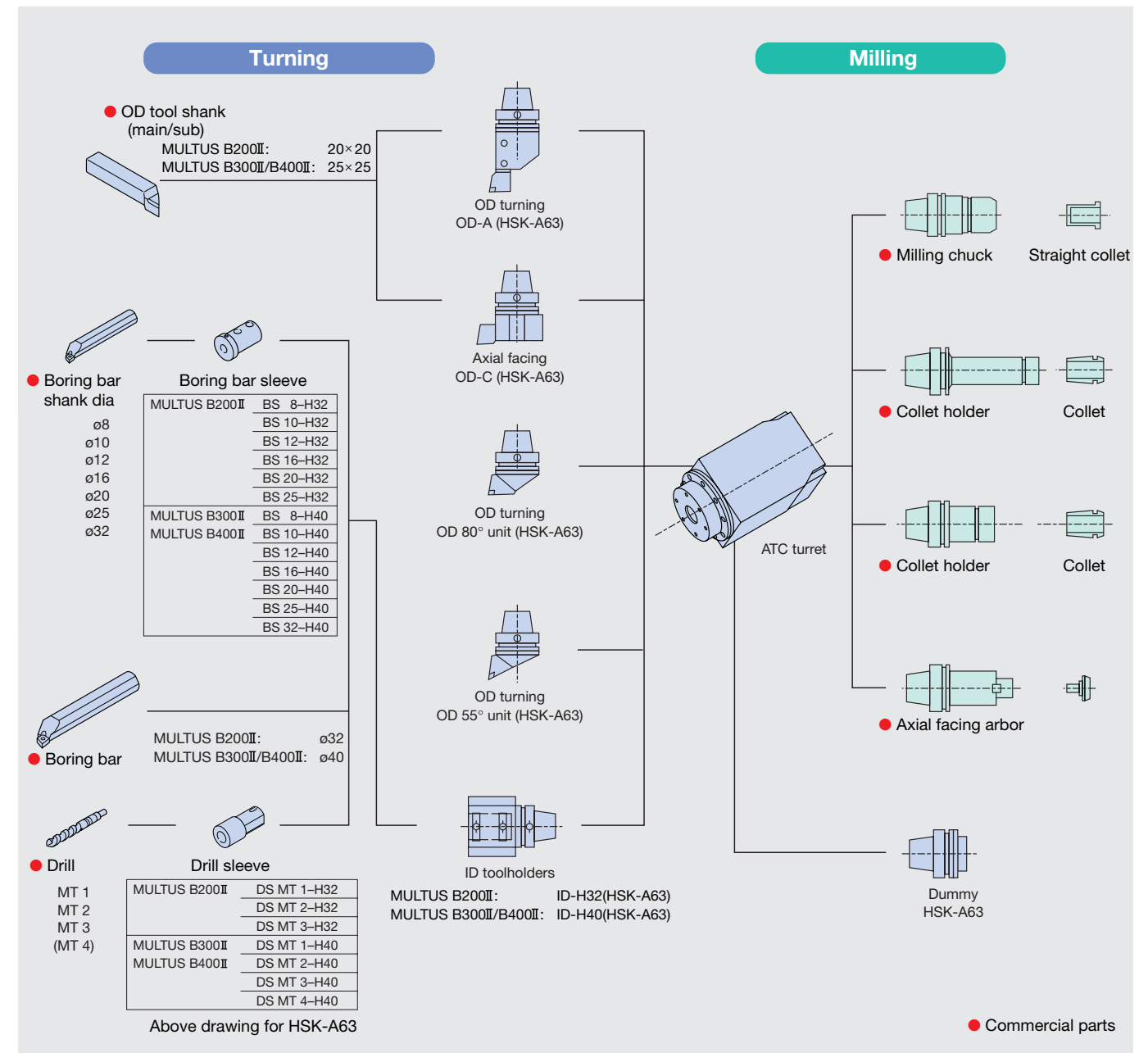
Specifications	MULTUS B200II				MULTUS B300II			MULTUS B400II					
	550		750		900			1,500		2,000			
	T	C	C	W	T	C	W	T	C	W	C	W	
Capacity	Swing over saddle mm (in.) $\phi 600$ (23.62)												
	Max machining dia mm (in.) $\phi 600$ (23.62)												
	Distance between centers mm (in.) 550 (21.65) 750 (29.53) 900 (35.43) 1,500 (59.06) 2,000 (78.74)												
Travels	X axis mm (in.) 500 (+480 to -20) (19.69 (+18.9 to -0.79))												
	Z axis mm (in.) 600 (23.62) 800 (31.5) 935 (36.81) 1,545 (60.83) 2,045 (80.51)												
	Y axis mm (in.) 160 (+80 to -80) (6.3 (+3.15 to -3.15))												
	W axis mm (in.) - 810 (31.89) - 1,000 (39.37) - 1,550 (61.02) - 2,050 (80.71)												
	C-axis control degree 360 (min control angle 0.001)												
Main spindle	B axis indexing angle degree 225 (-30 to 195 (min control angle 0.001))												
	Spindle speed $\text{min}^{-1}$ 50 to 6,000 [45 to 5,000] 45 to 5,000 [38 to 3,800] 38 to 3,800 [30 to 2,800]												
	Speed ranges Auto 2-speed (coil switch) Auto 2-speed (coil switch) Auto 2-speed (coil switch)												
Opposing spindle	Spindle nose $\phi 140$ flat [JIS A2-6] JIS A2-6 [JIS A2-8] JIS A2-8 [JIS A2-11]												
	Tapered bore / Bearing dia mm (in.) $\phi 62/\phi 100$ [ $\phi 80/\phi 120$ ] ( $\phi 2.44/\phi 3.94$ [ $\phi 3.15/\phi 4.72$ ]) ( $\phi 2.44/\phi 3.94$ [ $\phi 3.15/\phi 4.72$ ]) ( $\phi 3.15/\phi 4.72$ [ $\phi 4.33/\phi 5.91$ ])												
	Spindle speed $\text{min}^{-1}$ - 50 to 6,000 - 45 to 5,000 - 38 to 3,800 <sup>2</sup> - 38 to 3,800 <sup>2</sup>												
Turret	Type H1-ATC												
	No. of tools stations 1 for both L and M tools												
	Tool shank / Boring bar shank dia mm (in.) $\square 20/\phi 32$ ( $\square 3/4/\phi 1-1/4$ ) $\square 25/\phi 40$ ( $\square 1-1/2$ )												
Milling tool spindle	Speed range $\text{min}^{-1}$ 50-12,000 [20,000*3] 50-6,000 [10,000]												
	Max torque N·m 40.1/26.3 (5 min/cont) 65.7/41.8 *2 [57.3/38.2 (5 min/cont)] 85/59.6 (5 min/cont) [65.5/45 (5 min/cont)]												
	Milling tool spindle dia mm (in.) $\phi 65$ (2.56) $\phi 70$ (2.76)												
Feeds	Cutting feed command range mm/rev (ipr) 0.001 to 1,000 (0.00004 to 39.37)												
	Rapid traverse mm/min (ipm) - W: 20,000 (787) - W: 20,000 (787) - W: 20,000 (787) - W: 20,000 (787)												
	min <sup>-1</sup> (rpm) C: 200 B: 30												
NC tailstock	Center size - MT 4 - MT 5 - MT 5 - MT 5 -												
	Tailstock travel mm (in.) - 720 (28.35) 810 (31.89) - 1,000 (39.37) - 1,550 (61.02) - 2,050 (80.71) -												
ATC	Tool shank / Pull stud HSK-A63 [CAPTO C6]												
	No. of tools 20 [40, 60] 20 [40, 80]												
	Max tool dia mm (in.) $\phi 90$ (3.54) ( $\phi 130$ (5.12) w/o adjacent tools)												
	Max tool length mm (in.) 200 (7.87) from gauge line 300 (11.81) from gauge line 400 (15.75) from gauge line												
Motors	Main spindle kW (hp) PREX 11/7.5 (15/10) (20 min/cont) [Big Bore: 22/15 (30/20) (15 min/cont)] VAC 15/11 (20/15) (20 min/cont) [22/15 (30/20) (20 min/cont)] VAC 22/15 (30/20) (50% ED/cont) [30/22 (40/30) (50% ED/cont)]												
	Opposing spindle kW (hp) - PREX 11/7.5 (15/10) (20 min/cont) - VAC 15/11 (20/15) (20 min/cont) - VAC 22/15 <sup>2</sup> (30/20) (20 min/cont) - VAC 22/15 <sup>2</sup> (30/20) (20 min/cont)												
	Milling tool spindle (5 min/cont) kW (hp) VAC 12/8 (16/11) [VAC 9/6 (12/8)*3] PREX 11/7.5 (15/10) [PREX 16/11 (21/15)] PREX 14/10 (19/13) [PREX 20/14 (27/19)]												
	Z axis kW (hp) BL2.8 (4) BL3.5 (5) BL4.6 (6)												
	X axis kW (hp) BL3.5 (5) BL3.5 (5) BL3.5 (5)												
	Y axis kW (hp) BL2.9 (4) BL2.9 (4) BL2.8 (4)												
	W axis kW (hp) - BL2.9 (4) - BL2.9 (4) - BL2.8 (4)												
	Coolant pump kW (hp) - 0.8 (1)												
	Machine size	Height mm (in.) 2,582 (101.66) 2,587 (101.85) 3,000 (118.11) 3,137 (123.5)											
		Floor space (including filter unit) mm (in.) 3,385 × 2,210 (133.27 × 87.01) 3,925 × 2,210 (154.53 × 87.01) 4,340 × 2,257 (170.87 × 88.86) 5,750 × 2,693 (226.38 × 106.02) 7,050 × 2,693 (277.56 × 106.02)											
Weight (with CNC) kg (lb) 7,000 (15,400) 7,800 (17,160) 8,000 (17,600) 9,700 (21,340) 10,000 (22,000) 10,300 (22,660) 14,200 (31,240) 14,500 (31,900) 15,500 (34,100) 16,500 (36,300) 17,500 (38,500)													

\*2. Big-bore opposing spindle specs available for the MULTUS B400II:  $\phi 110$ ,  $\phi 150$  mm, JIS A2-11, 30 to 3,000  $\text{min}^{-1}$ , VAC 22/15 kW (30 min/cont).  
 \*3. HSK-A63 only. [ ] : Optional

## Standard Specifications and Accessories

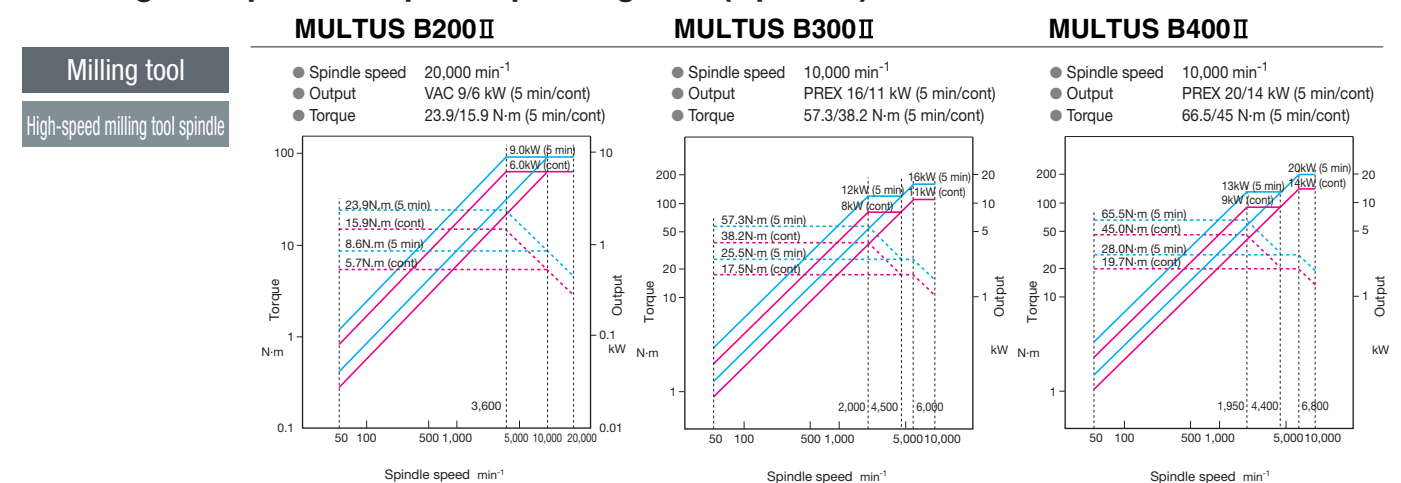
	MULTUS B200II	MULTUS B300II	MULTUS B400II
Headstock	$\phi 140$ flat (PREX 11/7.5 kW 6,000 $\text{min}^{-1}$ )	JIS A2-6 (VAC 15/11 kW 5,000 $\text{min}^{-1}$ )	JIS A2-8 (VAC 22/15 kW 3,800 $\text{min}^{-1}$ )
Milling tool spindle	VAC 12/8 kW 12,000 $\text{min}^{-1}$	PREX 11/7.5 kW 6,000 $\text{min}^{-1}$	PREX 14/10 kW 6,000 $\text{min}^{-1}$
Turret	H1-ATC, L/M		
NC tailstock	C specs, dead MT 4 (live quill)		
Auto tool changer	20 tools, HSK-A63 tool shanks		
Coolant system	Removable coolant tank, pump		
In-machine work lamp	LED lamp, mounted above spindle		
Full-enclosure shielding	○		
Foundation washers, leveling bolts	○		
Hand tools	○		
NC controller	OSP-P300S		
Swivel operation panel	15-inch color TFT display		
Pulse handle	1 pc, portable (electronic handwheel)		
Thermo Active Stabilizer — Spindle (TAS-S)	○		
Thermo Active Stabilizer — Construction (TAS-C)	○		
Collision Avoidance System (CAS)	○		
C-axis control	○		
Synchronized tapping	○		

## Tooling System (HSK-A63)



\* Some commercial live tools, based on DIN69893-1 HSK-A63, can also be used.

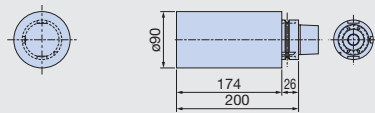
## Milling tool spindle torque/output diagrams (Optional)



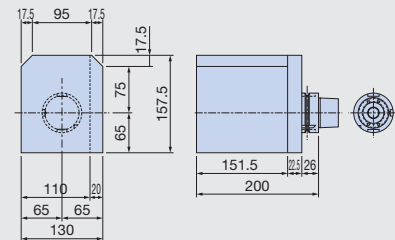
## Max tool dimensions

### MULTUS B200II

● Std tool

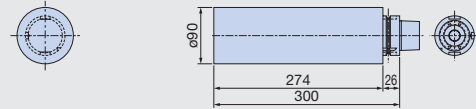


● Super big bore tool

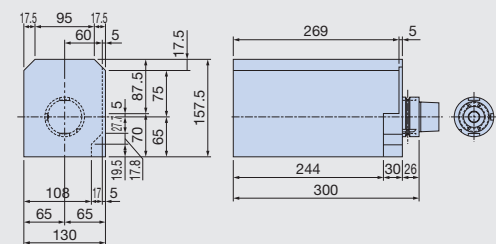


### MULTUS B300II

● Std tool

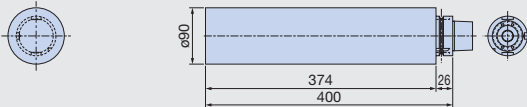


● Super big bore tool

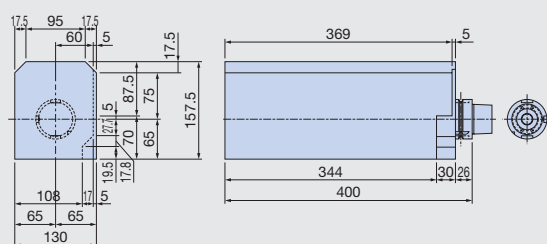


### MULTUS B400II

● Std tool



● Super big bore tool

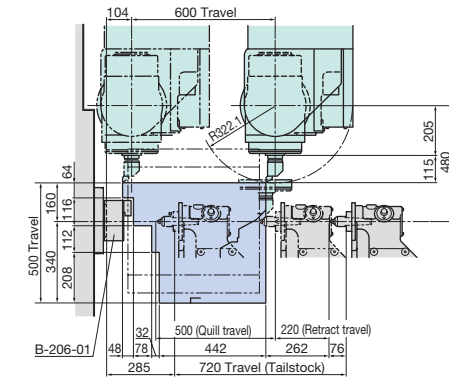


## Working Ranges

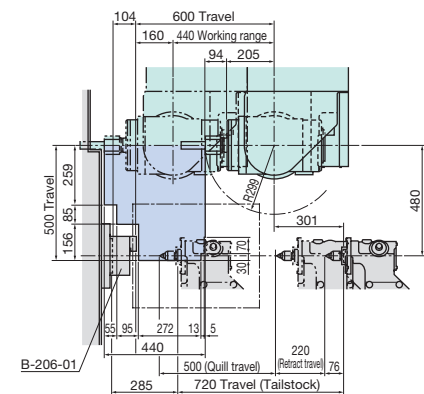
### MULTUS B200II

Main spindle [550 distance between centers]

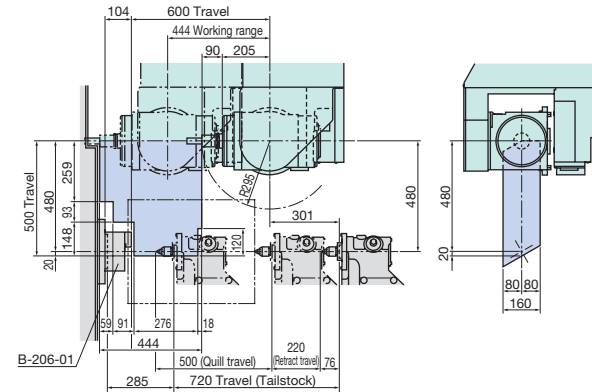
● OD-A (B axis 90°)



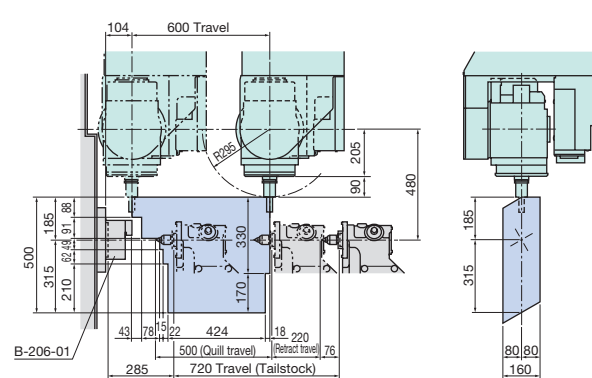
● ID-H32 (B axis 0°)



● End mill toolholder (B axis 0°)

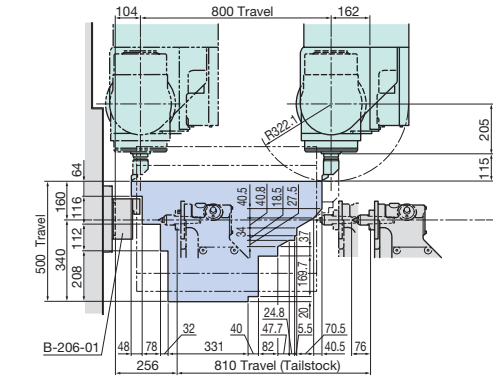


● End mill toolholder (B axis 90°)

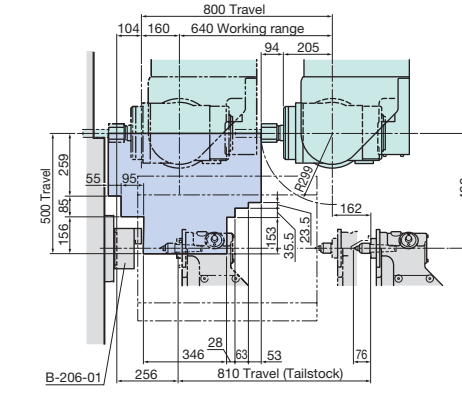


Main spindle [750 distance between centers]

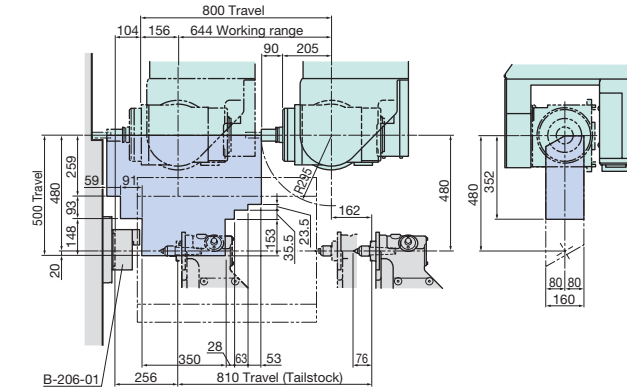
● OD-A (B axis 90°)



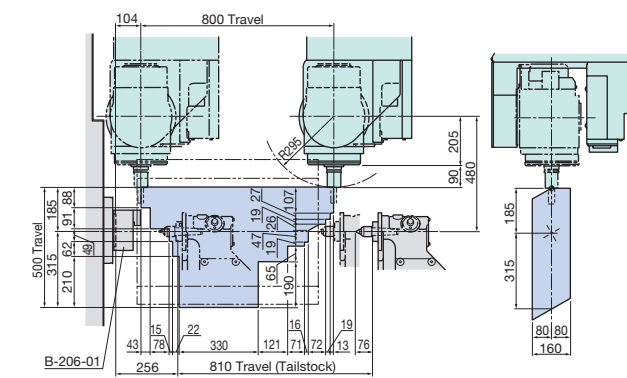
● ID-H32 (B axis 0°)



● HSK-A63 End mill toolholder (B axis 0°)

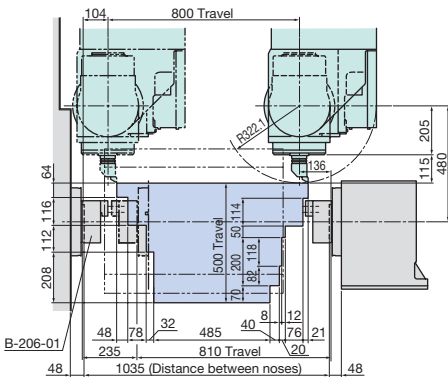


● HSK-A63 End mill toolholder (B axis 90°)

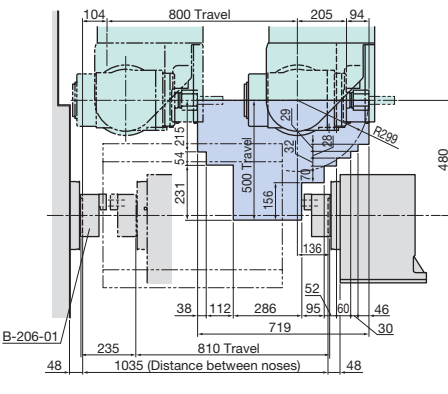


Opposing spindle

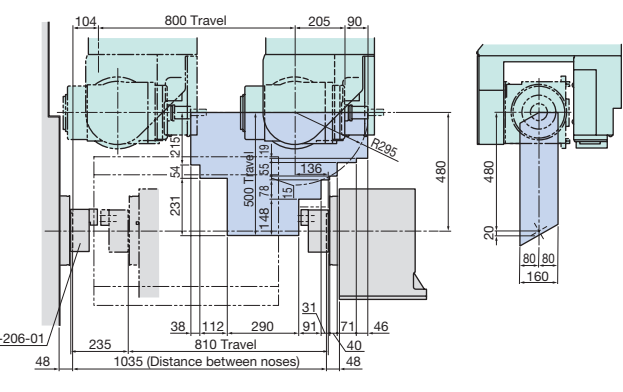
● OD-A (B axis 90°)



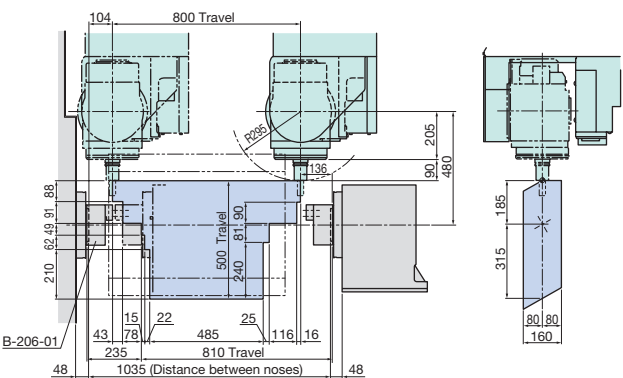
● ID-H32 (B axis 180°)



● End mill toolholder (B axis 180°)



● End mill toolholder (B axis 90°)





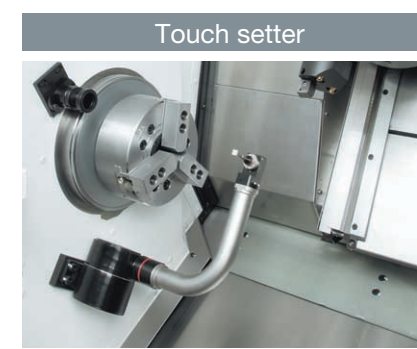
## Optional Specifications and Accessories

Big-bore specs	MULTUS B200II ø120 A2-6 5,000 min <sup>-1</sup> High-power spindle motor PREX 22/15 kW included
	MULTUS B300II ø120 A2-8 3,800 min <sup>-1</sup> High-power spindle motor VAC 22/15 kW included
	MULTUS B400II ø150 A2-11 2,800 min <sup>-1</sup> High-power spindle motor VAC 30/22 kW included
High-power spindle motor	MULTUS B200II PREX 15/11 kW MULTUS B300II VAC 22/15 kW MULTUS B400II VAC 30/22 kW
Milling tool optional spindle speeds	MULTUS B200II 20,000 min <sup>-1</sup> VAC 9/6 kW*
	MULTUS B300II 10,000 min <sup>-1</sup> PREX 16/11 kW
	MULTUS B400II 10,000 min <sup>-1</sup> PREX 20/14 kW
Tool shank	CAPTO C6
Milling tool thru-spindle	
High pressure coolant	3.7 kW 7 MPa
ATC tool magazine capacity	40, 60 tools (MULTUS B400II has 80 tools)
Chip conveyor	Side discharge, drum filter type
	Side discharge, hinge type
Chip bucket	
Touch setter	Touch setter M (Manual)
	Touch setter A (Auto)
In-process work gauging	Renishaw radio transmission

\*HSK-A63 only

AbsoScale	X, Y, Z-axes
High accuracy C axis	
Automated systems	Bar feeder, parts catcher
	OGL loader
	Robot
Air blower (air blast)	Chuck
	Tailstock
	Within spindle
	Turret
Coolant blower	Shower coolant system
	Within spindle
Special coolant pump	High/low pressure
Coolant sensors	Oil level
	Flow
Coolant tank	With line filter
	With reverse washing filter (separate)
Coolant sludge prevention	Oil skimmer
Mist collector	
Steadyrest	
B-axis NC control	
Hydraulic power chuck	Solid chuck, hollow chuck
Work stopper in spindle	
Auto chuck open/close	With confirmation
Chuck pressure high/low switch	
Chucking miss detection	
Workpiece stand	
Front cover auto open/close	Area sensor, Safe tape switch
Coolant gun	
Tooling	Please refer to the tooling system

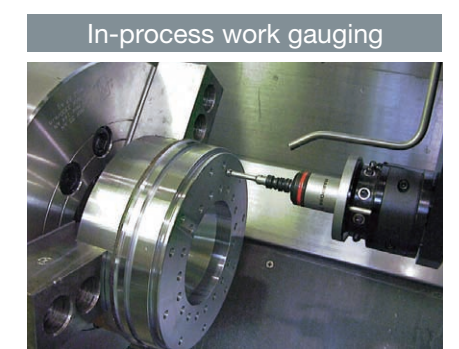
## Optional Specifications and Accessories



Auto cutting-point measurement and tool offset/breakage detection

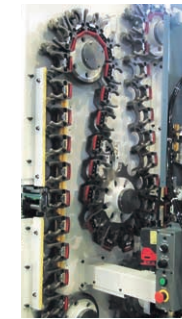


For highly efficient turning/machining of long workpieces



By ATC-delivered, high-precision wireless touch sensor – for superb auto work gauging (dual dia/radius gauging).

### Multiple tool ATC magazine



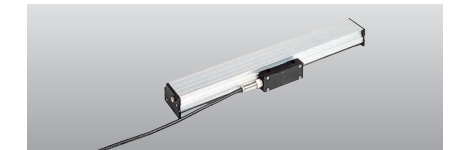
A large capacity tool magazine to handle a wider variety of workpieces  
MULTUS B200II/B300II: 60-tool magazine  
MULTUS B400II: 80-tool magazine

### CAPTO C6



Sandvik quick-change tooling system

### AbsoScale/DD encoder



[AbsoScale] High speed, high resolution optical positioner. Not affected by ball screw thermal expansion or backlash, for improved finishing accuracy.

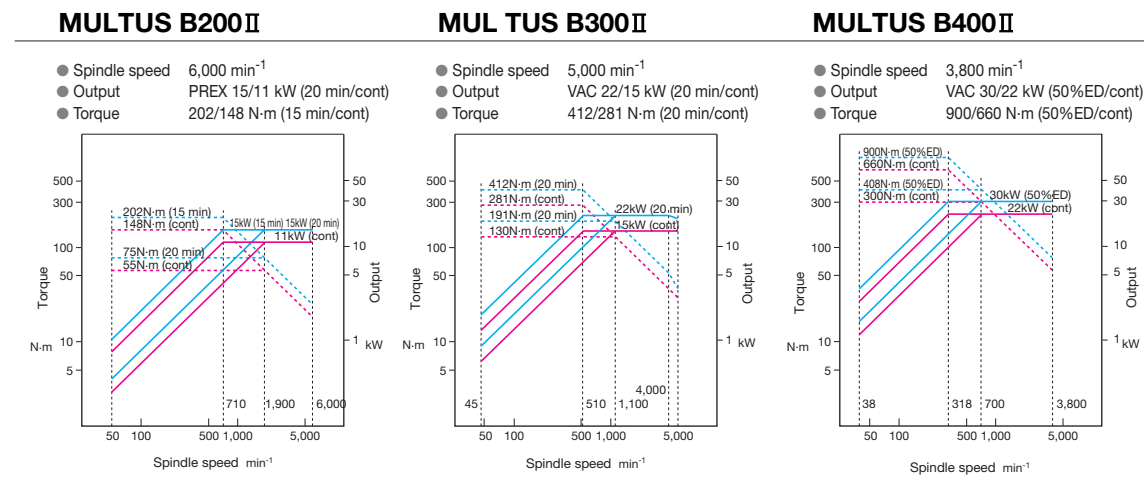


[DD encoder] High accuracy, high resolution rotary encoder for high accuracy C axis control.

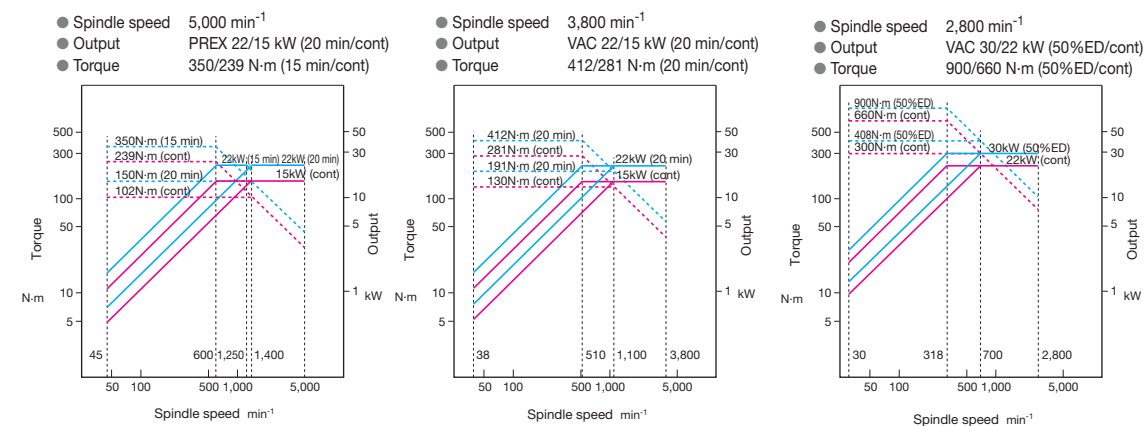
## Spindle torque/output diagrams (Optional)

### Main spindle motor

### High-power spindle



### Big-bore specs



### Chip conveyor



Hinged chip conveyor



Chip conveyor with drum filter

### Various chip conveyors

### Chip conveyor types and applications

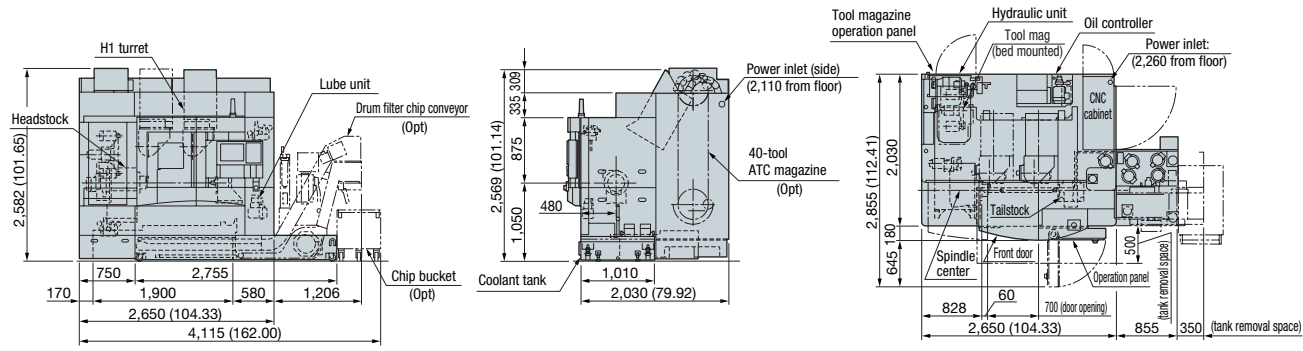
Type	Hinge	Scraper	Magnet scraper	Hinge scraper (w/drum filter)
Application	● For steel	● For castings	● For castings	● For steel, castings, nonferrous metal
Features	● General use	● Easy for maintenance ● Blade scraper	● Suitable for sludge ● Not suitable for nonferrous metals	● Filtration of long and short chips and coolant
Shape				
Remarks	Filter unit included with the selected conveyor (set).			–

\*The machine may need to be raised depending on the type of conveyor.

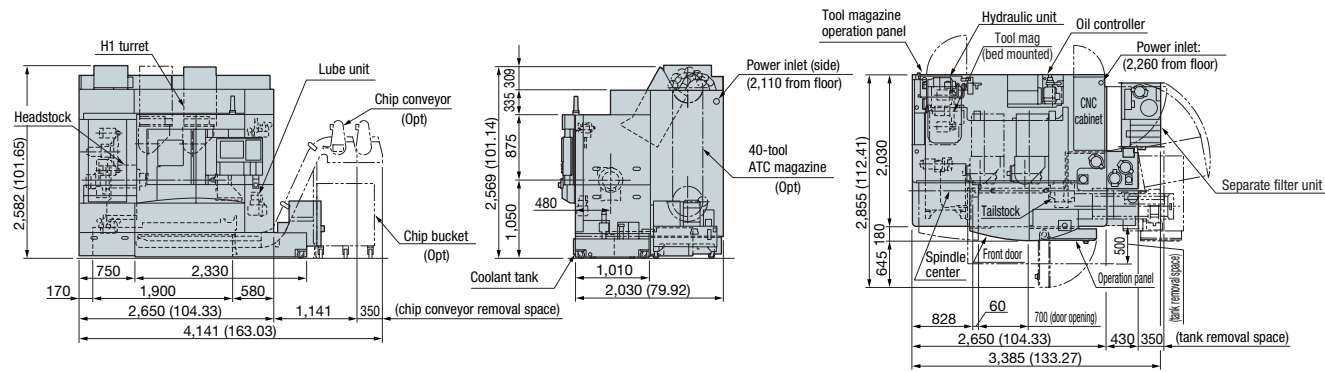
## Dimensional/Installation Drawings

### MULTUS B200II

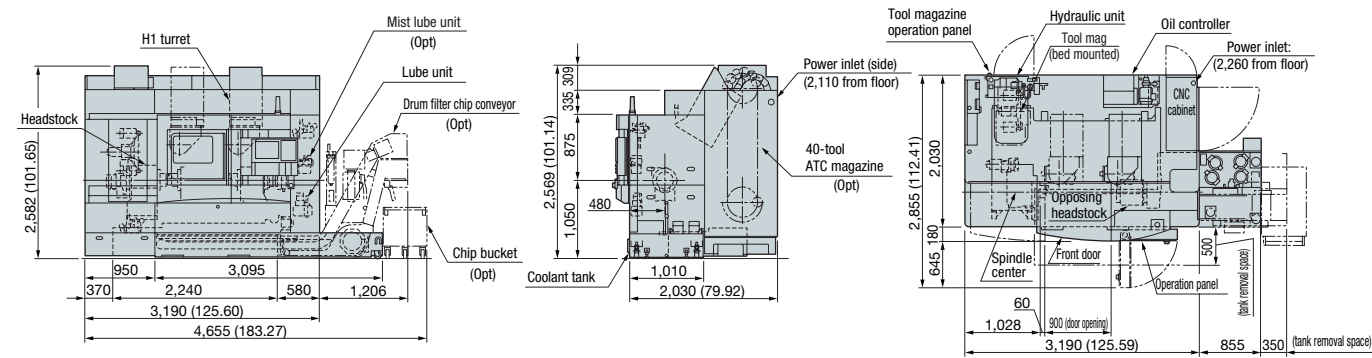
× 550 with drum filter conveyor



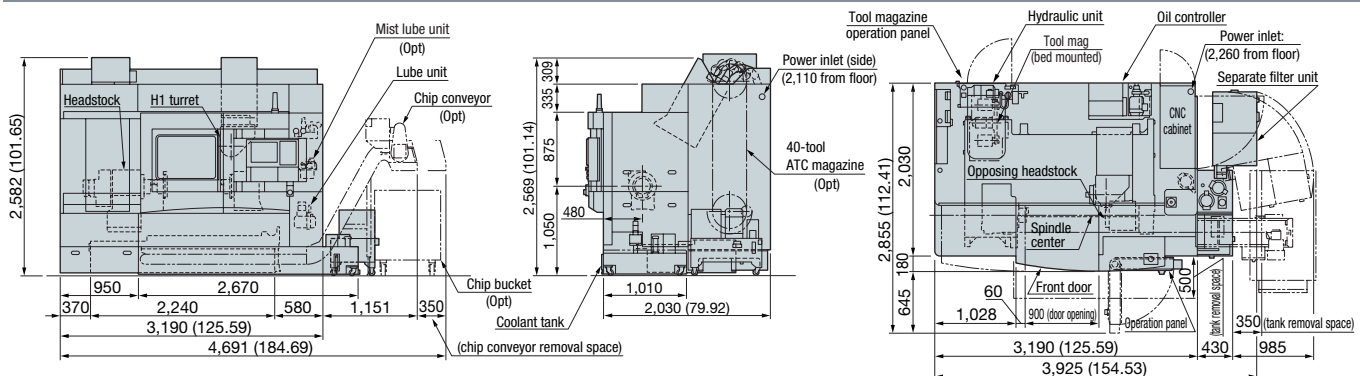
× 550 with hinge scraper conveyor



× 750 with drum filter conveyor

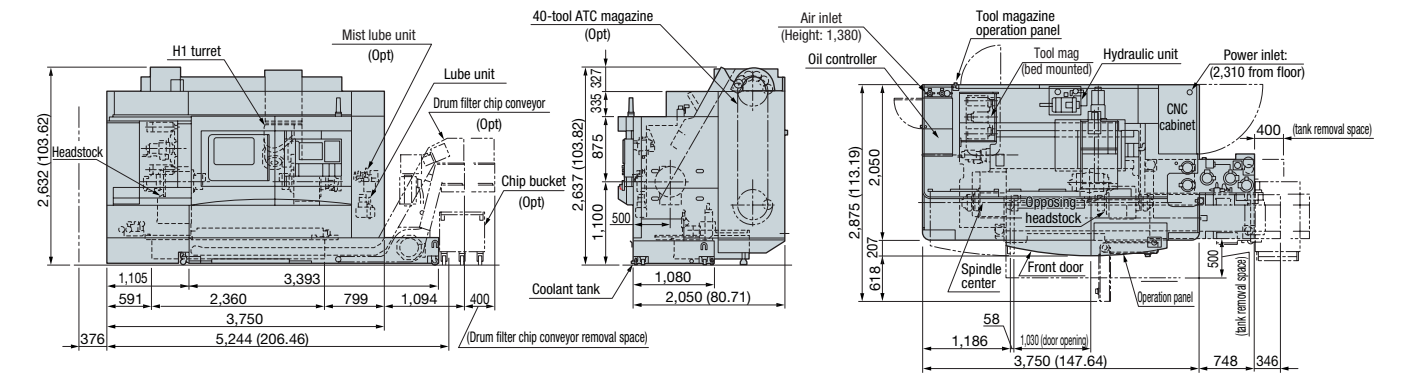


× 750 with hinge scraper conveyor

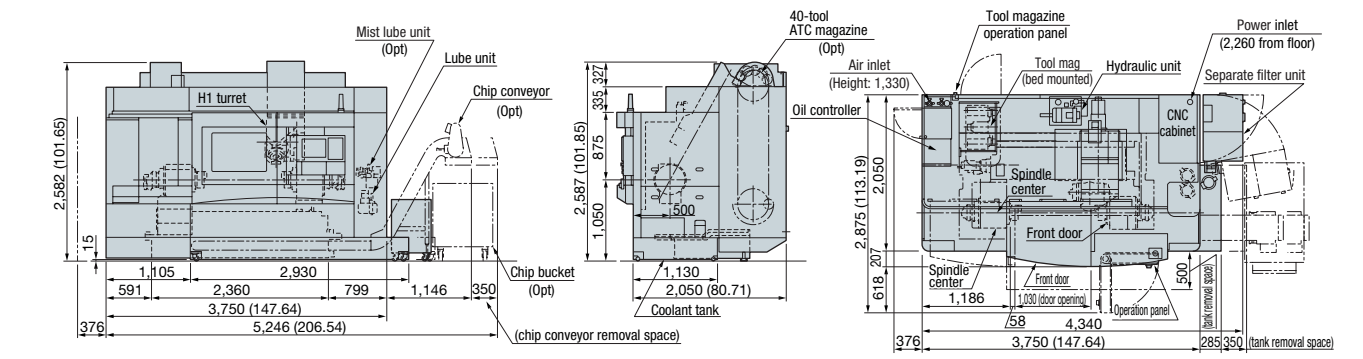


### MULTUS B300II

× 900 with drum filter conveyor

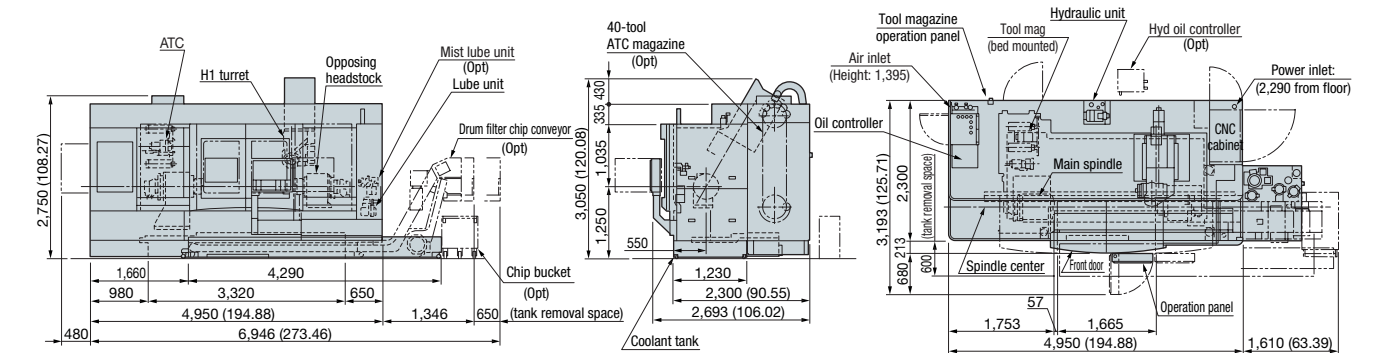


× 900 with hinge scraper conveyor

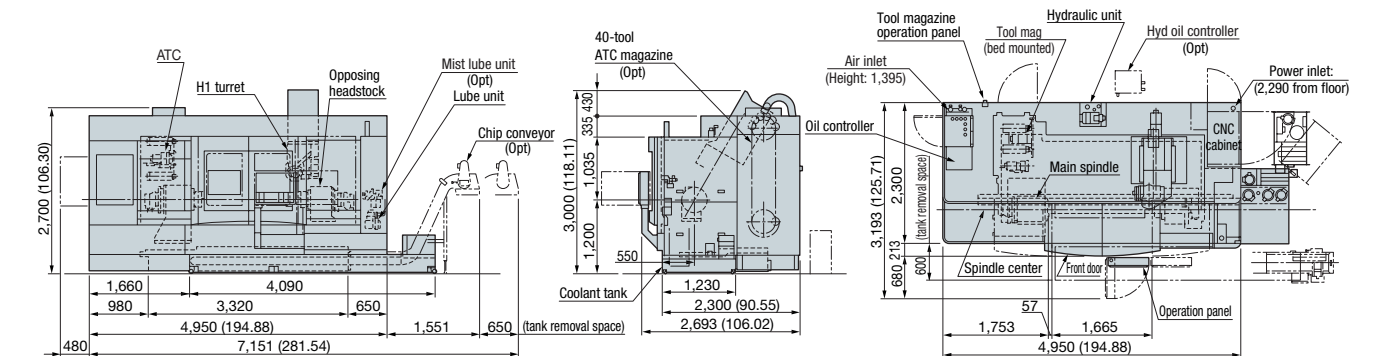


### MULTUS B400II

× 1500 with drum filter conveyor



× 1500 with hinge scraper conveyor



# OSP-P300S

## Standard Specifications

Basic Specs	Control	Turning: X, Z simultaneous 2-axis, Multitasking: X, Y, Z, C simultaneous 4-axis
	Position feedback	OSP full range absolute position feedback (zero point return not required)
	Min / Max inputs	8-digit decimal, ±99999.999 ~0.001 mm, 0.001" Decimal: 1 μm, 10 μm, 1 mm (1°, 0.01°, 0.001°)
	Feed	Override: 0 to 200%
	Spindle control	Direct spindle speed commands (S5) override 50~200% Constant cutting speed, max turning speed designate
	Tool commands	2-digit tool no. + 4-digit tool no. (max tool registration: 1000 sets)
	Tool compensation	Tool offset: 20 sets per tool Tool wear comp: 20 sets per tool Nose R comp: 20 sets per tool
	Display	15-inch color display operational panel, touch panel
	Self-diagnostics	Automatic diagnostics and display of program, operation, machine, and NC system problems
	Program capacity	Program storage: 2 GB, operation buffer: 2 MB
Operations	Easy to operate	"Single-mode operation" for a series of operations from a single screen. Bundled tool control: tool shape, tool tilt, tool offsets per tool number. Tool data sharing between machining operations, One-Touch IGF, Collision Avoidance System. Easy-to-use operation panel supports complete machine control.
	Collision Avoidance System (CAS)	Prevents interference during manual, automatic operation Easy modeling of shape data (there are limits in interference prevention unit, unit movement)
	Programing	Program management, edit, multitasking, scheduled programs, fixed cycles, special fixed cycles, tool nose R compensation, slope machining, M-spindle synchronized tapping, fixed drilling cycles, arithmetic functions, logic statements, trig functions, variables, branch statements, auto programming (LAP4), programming help
	Machine operations	MDI, manual (rapid traverse, manual cutting feed, pulse handle), load meter, operations help, alarm help, sequence return, manual interrupt & auto return, threading slide hold, data I/O, spindle orientation (electric)
	MacMan	Machining Management: machining results, machine utilization, fault data compile & report, external output
	Com / Net	USB ports, Ethernet
High speed/accuracy	TAS-C	Thermo Active Stabilizer-Construction. Corrects thermal deformation generated during shop temperature changes affecting machine construction
	TAS-S	Milling tool Thermo Active Stabilizer-Spindle. Corrects thermal deformation during milling tool spindle rotation
	High speed/accuracy	Hi-G control, B-axis rotation compensation

## Kit Specifications

Item	Kit	OSP-P300S					
		NML-M		3D-M		One-touch M	
		E	D	E	D	E	D
Advanced One-Touch IGF L(*)						●	●
Circular threading		●		●		●	●
Program notes (MSG)		●		●		●	●
Coordinate system selection 10 sets		●		●		●	●
Coordinate convert		●		●		●	●
Profile generate		●		●		●	●
Coordinate calculate (W/NCYL commands)		●		●		●	●
Moving, rotating and copying coordinates		●		●		●	●
Real 3-D simulation		●		●		●	●
Cycle time over check		●		●		●	●
Load monitor (spindle, feed axes)		●		●		●	●
Tool life management		●		●		●	●
NC operation monitor		●		●		●	●
Status indicator; triple lamp Type C		●		●		●	●
Hi-Cut Pro		●		●		●	●
Harmonic spindle speed control (HSSC)		●		●		●	●
Operation time reduction		●		●		●	●

\* Multitasking machine specs

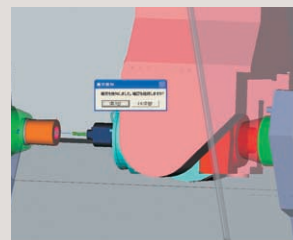
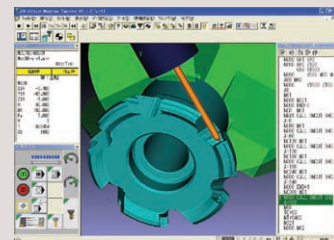
NML: normal, 3D: Real 3-D, E: economy, D: deluxe

## 3D machine simulation ADMAC-Parts 3D Virtual Monitor



Accurate machine model and NC function recreates operation just like actual machine operation

- Accurate interference check
- Create Collision Avoidance System data at the desk



## Optional Specifications

Specifications	Description	Specifications	Description
<b>Interactive Programming</b>		<b>Measuring</b>	
Advanced One-Touch IGF L (Multitasking machine specs)	Integrated single-screen operations	In-process work gauging	By touch sensor and compensates for tool offset
	Inputting a machining shape with one stroke will allow CNC to automatically decide cutting conditions.	Z-axis automatic zero offset	Automatically measures workpiece by touch sensor and compensates for Z-axis zero point offset
	Realistic 3D simulated test cuts	C-axis zero offset	Automatically measures workpiece by touch sensor and compensates for C-axis zero point offset
	Simple operations for trial cuts	Gauging data output, file output	
	Operate machine directly from sequence tables (w/o G/M codes)	Post-process work gauging	Measures workpiece outside machine, and compensates for tool offset based on measurement results
<b>Programming</b>		<b>External Input/Output and Communication Functions</b>	
Program notes (MSG)	Displays messages on the screen using part program commands	Additional RS-232-C channels	2 channels optional (1 channel is standard)
Coordinate system selection	Selects 10 sets, 50 sets or 100 sets as the coordinate system using the part program commands	USB (additional)	2 additional ports possible
Circular threading	Along an arc	DNC links	DNC-T3 Online machining management (results, etc) Simple NC monitor (machine utilization)
User Task 2	Input/output variables (each 8 points)	DNC-C / Ethernet *	Host computer and FMS link per Internet
Common variables	1000 sets (Std: 200 sets)	DNC-DT	Ethernet remote operation: Download part programs from PC, select operation
Thread matching (spindle orientation required)	Possible to re-cut threads for threaded parts once removed	FL-net *	
Threading slide hold	Temporary stop during threading, excluding G34/G35 Temporary stop during threading for G34/G35	<b>Automation / Untended Operation</b>	
Variable spindle speed threading	VSS: spindle override while threading	Harmonic spindle speed control (HSSC)	Periodically varies the spindle speed, controls chatter when cutting large-dia thin or small-dia long workpieces
Inverse time feed	Commands the feedrate using the cutting time	Auto power shutoff M02, alarm	M02, alarm
Spindle synchro tapping	Spindle to Z axis (rigid tapping)	Warmup function (by calendar timer)	Automatic power ON and machine warmup at preset time
Spindle dead-slow cutting	Cutting at extremely slow spindle speeds	Tool retract cycle	Per interrupt signal
Helical cutting	Circular + helical axis interpolation	External program selections	A (pushbutton), 8 types B (rotary switch), 8 stages C1 (digital switch), 2-digit BCD C2 (external input), 4-digit BCD
Milling machine specs	Coordinate convert	Designates X-C coordinate through X-Y coordinate	Okuma loader (OGL) interfaces
	Profile generate	Straight line command on X-C plane, circular command	Third party robot and loader interface *
	Flat turning	Flat turning with spindle and M-axis synchronized	Type B (machine) Type C (robot and loader) Type D Type E
	Slope machining	B-axis slope programming made simple	Bar feeders
	Coordinate calculate (W/NCYL commands)	Calculates the point sequence on a straight line, the point sequence on a grid and the point sequence on a circumference using a single command	Bar feeder Interface only Maker Type
	Moving, rotating and copying coordinates	Moves the coordinate system in parallel or by rotating Machines while moving the same pattern in parallel or by rotating	Cycle time reduction
3D coordinate conversion	Can command parallel or rotational movement in the X, Y, Z-axes up to 3 times	Operation time reduction Chuck open/close Advance/retract	"Answer ignore" in auxiliary movements Spindle rotating check open/close Spindle rotating tailstock advance/retract
<b>Monitoring</b>		<b>High-Speed / High-Accuracy Functions</b>	
One-Touch Spreadsheet	Excel® files assist machining setups	B axis NC control	
Machining Navi	Optimum cutting conditions search L-g, M-g, M-i	Simultaneous 5-Axis kit	Super-NURBS, tool center point control II, Inverse time feed, DNC-DT, tool tilt command, Helical cutting, Slope machining
Real 3-D simulation	Real time simulation of all machining modes (auto, MDI, manual operation)	AbsoScale detection (X-Y-Z) *	Positioning detection by AbsoScale
	Solids, sections, transparent displays	0.1 μm control *	0.1 μm (0.01 μin.) command increments
	Colored tool-linked machining surface displays	Hi-Cut Pro	High speed and high accuracy machining through speed control and acceleration control suitable for the machining shape
	Main program lists displayed	Tool life management	Totals no. of workpieces or cutting time, automatically tool changes at preset conditions Graphs tool life data per tool
Various tool draw elements	With cycle time calculator	Super-NURBS	3 straight line axes High speed and high accuracy machining through the shape compensation function and shape adaption control
With cycle time calculator	With 2D simulation	3 straight line axes + rotational axis	High speed and high accuracy machining through the shape compensation function and shape adaption control, available for up to 2 rotational axes
Cycle time over check	Activates an alarm and stops when prescribed cycle time is exceeded	Tool center point control II	Operates with the commanded path as the tool center path (including tool tilt compensation)
Load monitor (spindle feed axis)	CNC monitors and displays load conditions of feed axis and spindle in a graph (machining stops when overloaded)	Tool tilt command	Commands the tilt direction of the tool using tool center point control
Load monitor no-load detection	When load monitor ordered	<b>Other Functions</b>	
Tool life management	Totals no. of workpieces or cutting time, automatically tool changes at preset conditions Graphs tool life data per tool	Y-axis alignment compensation	
Tool life alert		Hobbing	
Operation end buzzer		Synchronized C axis control	
Chucking miss detection	Included in machine specs	Spindle power peak cutting function	Cuts the peak power of the spindle
Work counters	Count only, ( ) pcs Cycle stop, ( ) pcs Start disabled, ( ) pcs	Short circuit breaker	
Hour meters	Power ON Spindle rotation NC operating	External M signals	
NC operation monitor	Time totals (cutting, operation, spindle rotation, external input, etc) and 4 workpiece counters	OSP-VPS	Virus protection system
NC work counter	Stops at full count with alarm		
Operation end lamp	Yellow		
Alarm lamp	Red		
Status indicator	Triple lamp Type C [Type A, Type B]		

Note: \* Requires technical consultation and confirmation with machine specifications

## ⚠ Fire Safety Precautions

To protect your factory and equipment from fire and assure continued safe operation, observe the following fire safety precautions whenever you operate machinery.

Whenever possible, avoid the use of oil-based coolants for cutting operations.

Sparks caused by hot chips, tool friction, and grinding can cause fires.

Always observe the following safety measures to ensure safe operation when machining flammable materials or when performing dry machining.

### 1. Oil-based coolant

(1) Use nonflammable cutting fluid coolant.

(2) When the use of an oil-based coolant is unavoidable:

- **Before** you begin machining, check cutting tools to make sure of their service life and the condition of the tool edge, and choose cutting conditions that will not cause a fire.
- Periodically clean the coolant filter to maintain sufficient coolant discharge, and frequently verify that coolant is discharging normally.
- Take measures to control the outbreak of fire: Place a fire extinguisher near the machine, have an operator constantly monitor operation, and install an automatic fire extinguishing system.
- Do not place flammable materials near the machine.
- Do not allow chips to over accumulate.
- Periodically clean the inside of the machine and the area surrounding it.
- Check that the machine is operating normally.
- Never run the machine unattended.
- Since an automatic fire extinguishing system and other peripherals are needed for grinding operations, please let us know as soon as possible if you plan to perform such operations.

### 2. Precautions regarding machining of potentially flammable materials

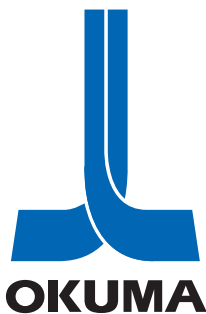
Before machining any material designated by law as a flammable substance, e.g., plastic, rubber, wood, acquaint yourself with the special characteristics of the material in terms of fire prevention, and observe the precautions given in (2) above to ensure safe operation.

Example: When machining magnesium, there is a danger that magnesium chips and water-soluble coolants will react to produce hydrogen gas, resulting in an explosive fire if any chip should ignite.

### 3. Dry machining

Dry machining is a fire hazard because workpieces, tools, and chips are not cooled. To ensure safe operation, do not place any flammable objects near the machine and do not allow chips to over accumulate.

In addition, be sure to check cutting tools to make sure of their service life and the condition of the tool edge, and observe the precautions regarding oil-based coolants given in (2) above.



This product is subject to the Japanese government Foreign Exchange and Foreign Trade Control Act with regard to security controlled items; whereby Okuma Corporation should be notified prior to its shipment to another country.